REMARKS/ARGUMENTS

The Office Action of April 18, 2008, has been carefully reviewed and these remarks and amendment are in response thereto. Claims 1-6 and 19 have been amended, new claims 38-40 have been added, and no claims been canceled. Claims 1-6, 19, and 38-40 thus remain pending in this application.

Rejections Under 35 U.S.C. § 112

Claims 2-5 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants have amended the claims to present the claims in a more preferred form, and respectfully request the rejection be withdrawn.

Claim 2 has been amended to eliminate the terms "crosstalk" and "examining," to clarify that the "traces" referred to are the "first trace" and the "second trace" of claim 1, and to clarify the term "rules." Claim 3 has been amended to be consistent with amendment of claim 2, to clarify with more specificity how claim 2 is being amended, to define the term "noise threshold" as a measure of crosstalk, and to define the action associated with the rule.

For the purpose of clarity only, the features previously recited in claim 4 have been separated into the amended version of claim 4 and new claim 38. Therefore, amended claim 4 eliminates reference to "physical threshold" and replaces the term "electrical threshold" with "electrical quantities" as a measure of crosstalk between the first trace and second trace. New claim 38, in replacement of "physical threshold," claims "spatial dimensions" as a measure of crosstalk between the first trace and second trace.

Claim 5 has been amended to be consistent with the amendment of claim 2, to clarify how claim 2 is being amended, to clarify that the distance referred to is predefined, and to define the action associated with the rule.

Rejections Under 35 U.S.C. § 103

Claims 1-6 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4652686, hereinafter Hirakata et al. Applicant respectfully traverses.

Hirakata is non-analogous Art. Hirakata teaches a "gap retaining member" which is a mechanical structure implemented as a manufacturing control to determine cell gap on a LCD

screen. Cell gap is the void above active pixel circuits in which liquid crystal flows. Hirakata also teaches the same "gap retaining member" as a mechanical sealing member for controlling the flow of liquid crystal. The present method is a virtual construct used in the design process of routing traces on PCBs to aid in the marking of locations on which to position the traces. A person with ordinary skill in routing PCBs or developing tools for routing PCBs is concerned with electrical properties and connectivity of traces as directed by a netlist. Such a person is not concerned with the mechanical integrity of structures such as LCD screens or the sealing of liquids in LCD screens. While it may be true that a person with ordinary skill in routing PCBs does deal with the mechanical placement of traces, he or she does so only within design rules given by the PCB manufacturer. Mechanical structures such as those taught by Hirakata are abstracted by the PCB manufacture and are of no concern to a person routing a PCB. Such a person with ordinary skill in routing PCBs or developing tools for routing PCBs does not deal with mechanical integrity of the PCB structure or control of the PCB manufacturing process. Thus, Hirakata would not have logically "commended itself to the applicant's attention in considering his method." See MPEP 2141.01(a)(citing KSR).

Hirakata does not teach or suggest a spacer with the same purpose, function or result as the spacer disclosed in the methods of independent claims 1 and 19. Claims 1 and 19 recite "inserting a spacer between the traces on a virtual PCB, wherein the spacer maintains one or more specified clearances" and "positioning a spacer adjacent to the first trace on a virtual PCB." Claims 1 and 19 further contain the limitation, "wherein the spacer is a virtual construct." To the contrary, Hirakata refers to "gap retaining members" that are formed as actual fixed structures to control a cell gap between a substrate containing active thin film transistors (TFTs) and a second substrate. See Hirakata, Col 3, 33-60; Col 5, 17.

The purpose of the "gap retaining members" referred to in Hirakata are different than the spacers in claims 1 and 19. The former is an actual physical structure that controls spacing between two mechanical substrates to improve mechanical integrity. The latter is a virtual construct to aid in the placement of traces on a virtual PCB. Unlike the gap retaining member in Hirakata, the spacers in claims 1 and 19 have no physical embodiment and only indicate spatial dimensions of the area between two traces. They do not serve a structural purpose after the routing of the entire PCB is complete.

The function of the gap retaining members and the spacers of claims 1 and 19 are also completely different. The gap retaining members do not operate as virtual constructs placed to maintain spacing between the circuits, but are used to control actual physical space above the circuits. They are placed between the circuits only because these locations are open areas on the substrate. See Hirakata, Col 3, Lines 57-59. Further, as applied to claims 3-5 the office misunderstands the function as cited in Hirakata. On col. 26, lines 11-19, Hirakata states,

> Further, as shown in FIG. 26, this embodiment has a feature that the gap retaining member 730 has a structure that enables sealing of a liquid crystal in the pixel area 102. Because of the presence of the gap retaining member 730, a liquid crystal is injected into only the space corresponding to the pixel area 102 and is not injected into the spaces corresponding to the driver circuit areas 103 and 104. Therefore, the load capacitances of the driver circuits can be reduced and hence crosstalk can be made less prone to occur.

While Hirakata refers making crosstalk less prone to occur, it does not do so by maintaining space between circuits as claims 1 and 19 do. The gap retaining members in Hirakata makes crosstalk less prone to occur by preventing liquid crystal from flowing above the circuits. The liquid crystal is what has an effect on crosstalk, not the gap retaining member itself or the space occupied by the gap retaining member.

Along with purpose and function, the results provided by Hirakata are different than those of claims 3-5. As taught in Hirakata, liquid crystal is a coupling capacitance. By preventing its flow above the driver circuits, crosstalk will be reduced between the driver circuits which are all on the same side of the gap retaining member, not on opposite sides as argued by the office. Further, Hirakata discusses the reduction of crosstalk as a general reduction on driver circuits to improve overall speed of the systems, and not as a specific solution to crosstalk between to circuits or nets. As such, the results given by Hirakata, are not analogous to the results given by the present methods of claim 1 and 19.

Finally, as applied claims 1-6 and 19, the office's statement that "a PHOSITA without undue skill would use a computer to analyze where, how many and what type of spacers would have been necessary" are without support in that Hirakata, as discussed, teaches none of these assertions. Further, the only suggestion or motivation for such an application is contained in the Applicant's own disclosure and is, therefore, impermissible hindsight. This is particularly true

with respect to claim 4 where the office, without anything other than the Applicant's own disclosure, states "a PHOSITA without undue skill would be able to use physical as well as electrical threshold to determine where, when and how large the spacers should be in order to minimized the noise associated with having traces close together." The office fails to recognize the distinction between being able to use such properties and the very novel and non-obvious task of applying their use to virtual spacers in the process of designing PCBs.

New claims 38-40 are allowable for at least the same reasons as stated above and further in view of the additional features recited in these claims. No new matter has been added.

CONCLUSION

All rejections having been addressed, applicant respectfully submits that the instant application is in condition for allowance, and respectfully solicits prompt notification of the same. However, if for any reason the Examiner believes the application is not in condition for allowance or there are any questions, the Examiner is requested to contact the undersigned at (202) 824-3153.

Respectfully submitted,

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